

Kinesthetic Writing, of Sorts

by Kirstin Bittel
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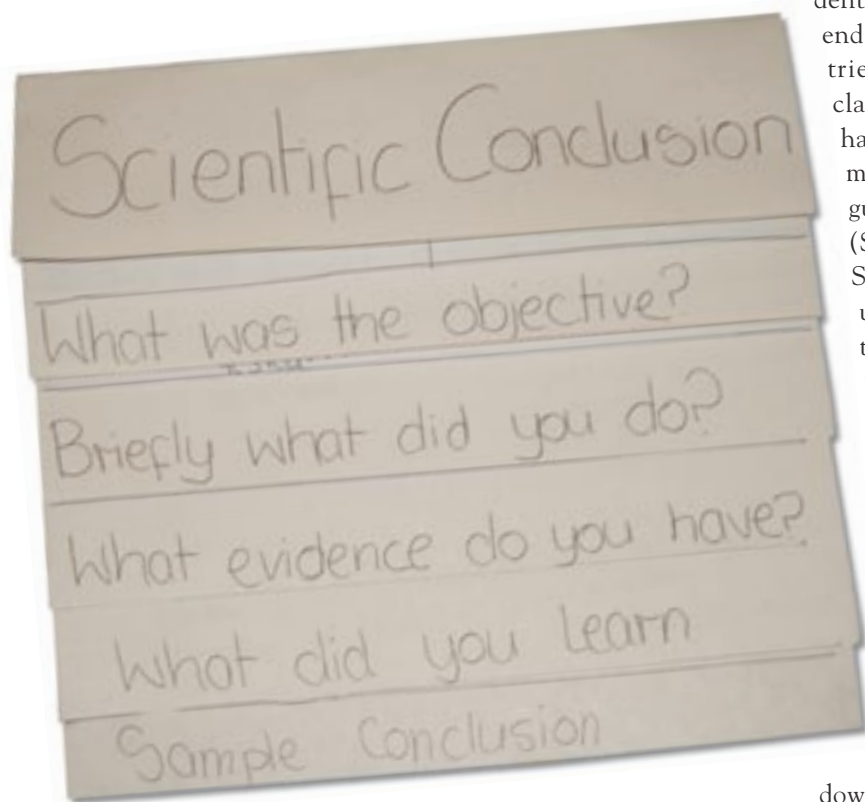
The ability to clearly communicate what was learned as the result of an experiment is a key component of science in general, not just science in the middle school classroom. The trick in the middle school classroom is teaching students how to write while making that writing meaningful and part of the everyday science experience, but not too time-consuming. Once that happens, it opens the door for students to see themselves as scientists communicating their ideas to others.

In our eighth-grade classrooms, we have focused on our students' ability to write quality conclusions at the end of every laboratory investigation. We have tried several strategies to help our students clarify their writing. The activity that follows has proven very successful with not only our mainstream students, but also our English Language Learners (ELLs) and special education (SPED) students as well. In fact, our ELLs and SPED students are writing significantly better using this tool than previously, bringing up their scores on the now common, six-traits of writing rubrics, by one to two rubric points in both the Ideas and Content and Organization categories (see Resources).

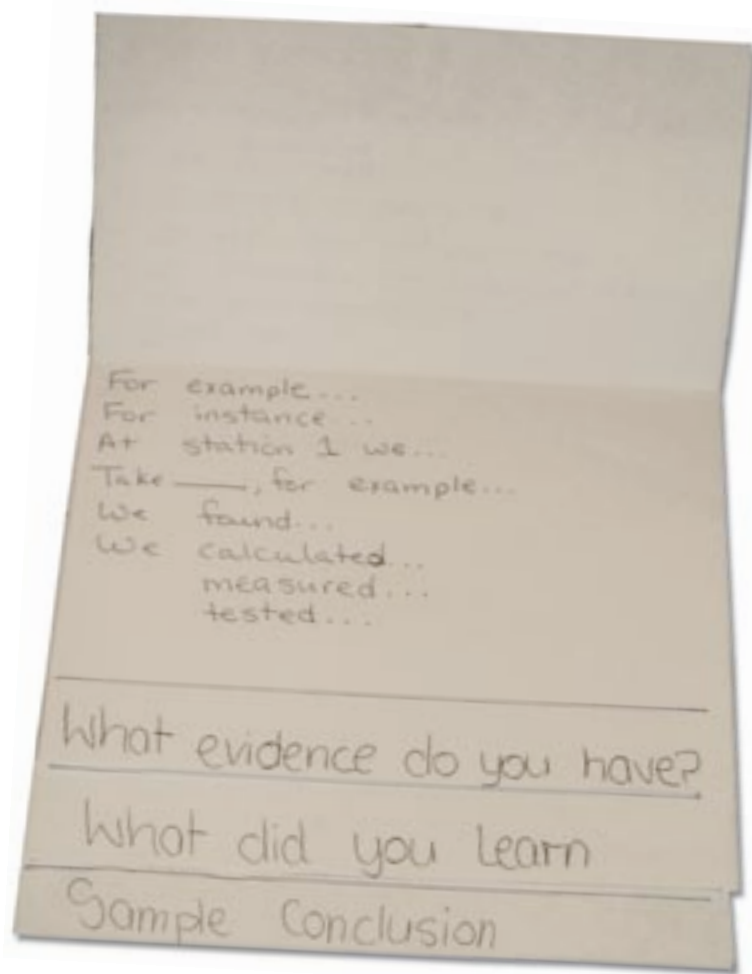
The flipbook

As students enter the room they are given three half sheets of letter size paper. These are used to make the flipbook (see Figure 1, and Resources for additional instructions). First, students take the three sheets of paper and place them on their desk vertically. Next, students pull each sheet

down so the top edges are about one to two centimeters from the top of the preceding page (Figure 1A). Students then carefully hold the paper and fold the entire stack up so that the bottom edge rests about one to two centimeters below the top edge (Figure 1B). Finally, students rotate the entire set of folded pages vertically and staple in the center. (Figure 1C). The flipbook



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is now ready to use and should have six flaps (one title page and five usable flaps).

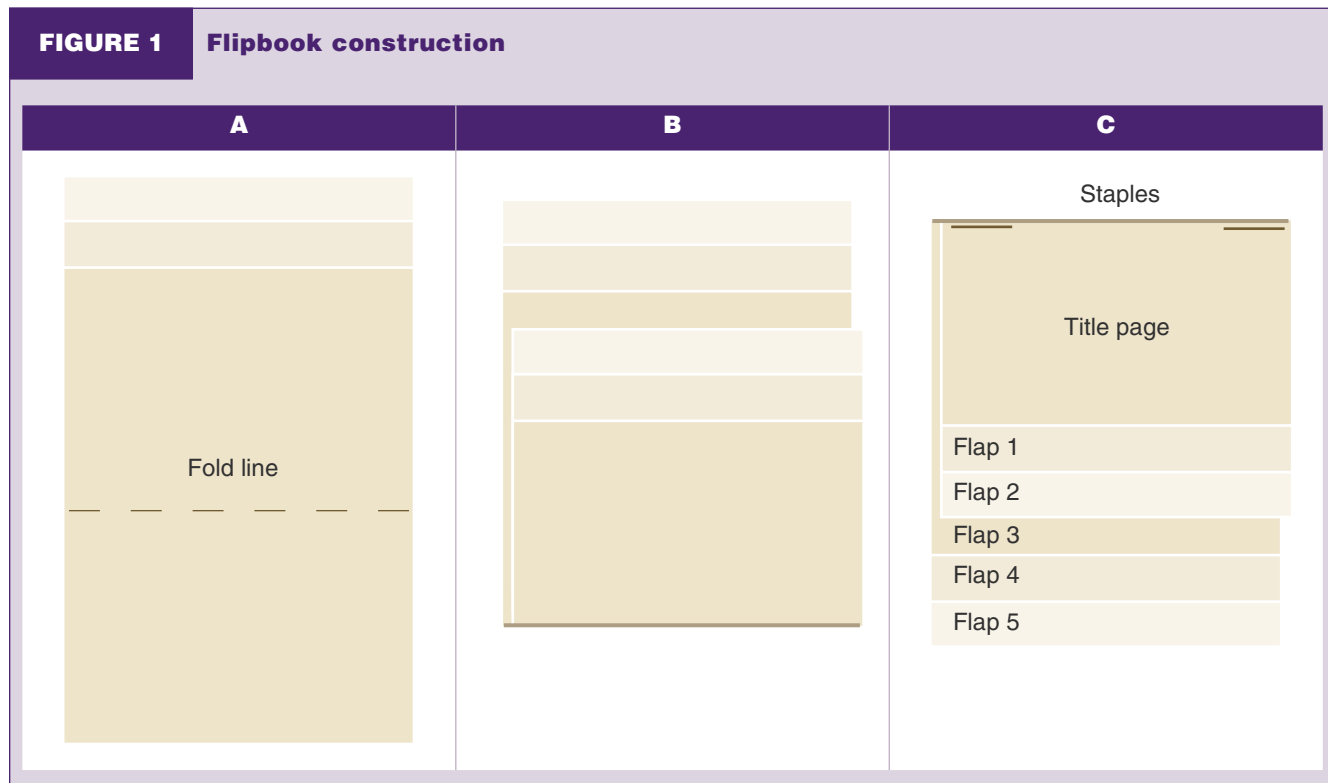
The conclusion criteria

Students label the top flap of the flipbook “Scientific Conclusion.” The second flap is labeled “What was the objective?” the third “Briefly, what did you do?” the fourth “What evidence do you have?” the fifth “What did you learn?” and the final flap is labeled “Sample conclusion.”

After students label each flap, they brainstorm sentence starters for each flap. This helps our ELLs, SPEDs, and struggling writers. Students who constructed flipbooks in the past are encouraged to share sentence starters they’ve used in the past. You can also suggest sentence starters if your students have trouble generating their own.

As a class, we use the sentence starters students just identified to create a quality conclusion. We describe this conclusion as “meeting the standard” expected and merely a starting point. The information from a sample flipbook is shown in Figure 2. We wrote our sample paragraph about an investigation where students were identifying the characteristic properties of metals because we had just

FIGURE 1 Flipbook construction



completed it. Any laboratory experience will work to create the sample conclusion for the flipbook.

Conclusion

Having the opportunity to manipulate a tool, in this case a flipbook, creates an opportunity to use a reference guide the students actually enjoy. These flipbooks help all our students, especially our ELL and SPED learners, as they can more easily communicate their understanding of concepts learned in science class. As students improve their writing skills, they are encouraged to break away from the flipbook and use more complex, less formulaic paragraphs to demonstrate their understanding of the investigations from class.

As a result of using this tool, we are able to spend less time reminding students of what belongs in a conclusion, and more time evaluating student understandings. Writing is now a more natural part of the learning process. It is vital to our students' ability to create a strong foundation for constructing meaning and integrating new concepts into their schemas correctly. ■

Resources

Six traits of writing—www.cyberspaces.net/6traits/rubric2.html

Flipbooks—teacherz.net/student212/Flip%20Book.htm

Acknowledgments

We wish to extend our gratitude to Kathie Dosh and Rachel Hughes for their helpful comments on earlier drafts.

FIGURE 2 Flipbook text example

Tab title	Text written under each tab
What was the objective?	<ul style="list-style-type: none"> • The objective for today was... • Turn the objective statement into a question or vice versa. • Scientists can use _____ to help them _____. • In order to _____ you first need to _____.
Briefly, what did you do?	<ul style="list-style-type: none"> • Today in lab we... • In this activity we ... • In order to answer our objective we ... • To test our hypothesis we ... • To collect evidence we ... • We calculated... • We measured... • We tested...
What evidence do you have? Be specific!	<ul style="list-style-type: none"> • For example,... • For instance,... • At station 1... • Take _____, for example, ... • We found... • We calculated... • We measured... • We tested...
What did you learn?	<ul style="list-style-type: none"> • I learned... • I discovered... • I now understand... • In conclusion,...
Sample conclusion	Identifying the characteristic properties of metals can help us make better uses of our resources. In this activity we observed the characteristic properties of copper, aluminum, and steel. We found that copper is malleable and does not react to acid. Aluminum is even more malleable, very lightweight, and also does not react to acid. Steel is a strong and dense metal, but it will rust. By looking at the characteristic properties of metals, I now understand how different metals can be used in different ways.